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(to be used for all correspondence after initial filing)

Application Number

10/686,944

Filing Date

October 15, 2003

First Named Inventor

Peter G. Schultz

Group Art Unit

1632

Examiner Name

Unassigned

Total Number of Pages in This Submission

Attorney Docket Number

54A-000610US

ENCLOSURES (check all that apply)

- ☐ Fee Transmittal Form
☐ Fee Attached
☐ Amendment / Response
☐ After Final
☐ Affidavits/declaration(s)
☐ Extension of Time Request
☐ Express Abandonment Request
☒ Information Disclosure Statement
☐ Certified Copy of Priority Document(s)
☐ Response to Missing Parts/
Incomplete Application
☐ Response to Missing
Parts under 37 CFR
1.52 or 1.53

- ☐ Assignment Papers
(for an Application)
☐ Drawing(s)
☐ Licensing-related Papers
☐ Petition Routing Slip (PTO/SB/69)
and Accompanying Petition
☐ Petition to Convert to a
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- ☐ After Allowance Communication
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☒ Additional Enclosure(s)
(please identify below):PTO form 1449, 45 cited
references and receipt
acknowledgment postcard**Authorization to Charge Deposit Account**Please charge Deposit Account No. 50-0893 for any additional fees associated with
this paper or during the pendency of this application, including any extensions of time
for consideration of the documents enclosed.

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENTFirm
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Jonathan Alan Quine, Reg. No. 41,261, Quine Intellectual Property Law Group, P.C.

Signature

Date

March 31, 2004

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Juliana Hermes

Signature

Date

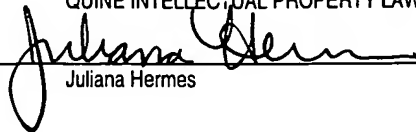
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QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C.

By


Juliana Hermes

Attorney Docket No. 54A-000610US
Client Ref. No. 967.1/AMB0013P

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Peter G. Schultz, et al.

Application No.: 10/686,944

Filed: October 15, 2003

For: GLYCOPROTEIN SYNTHESIS

Examiner: Unassigned

Art Unit: 1632

INFORMATION DISCLOSURE
STATEMENT UNDER 37 CFR § 1.97 and
§ 1.98

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

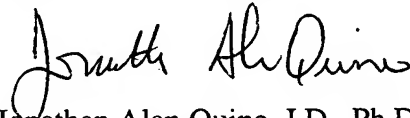
Sir:

The references cited on attached form PTO-1449 are being called to the attention of the Examiner. Copies of the references are enclosed. It is respectfully requested that the cited information be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR 1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

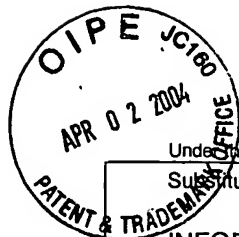
Applicant believes that no fee is required for submission of this statement, since it is being submitted prior to the first Office Action on the merits per 37 CFR 1.97(b)(3). However, if a fee is required, the Commissioner is authorized to deduct such fee from the undersigned's Deposit Account No. 50-0893. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Jonathan Alan Quine". The signature is fluid and cursive, with the first name "Jonathan" and last name "Quine" clearly distinguishable.

Jonathan Alan Quine, J.D., Ph.D.
Reg. No. 41,261

QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C.
P.O. BOX 458
Alameda, CA 94501
(510) 337-7871
Fax (510) 337-7877



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Substitute for form 1449A-B/PTO

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known

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| Application Number | 10/686,944 |
| Filing Date | October 15, 2003 |
| First Named Inventor | Peter G. Schultz |
| Group Art Unit | 1632 |
| Examiner Name | Unassigned |
| Attorney Docket Number | 54A-000610US |
| Date Submitted | March 31, 2004 |

U.S. PATENT DOCUMENTS

| Examiner Initials | Cite No. | U.S. Patent Document | | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document MM-DD-YYYY | Pages, Columns, lines, Where Relevant Passages or Relevant Figures Appeal |
|----------------------|-------------|----------------------|-------------------------|--|--|---|
| | | Number | Kind Code (if known) | | | |
| | 01 | 6,331,418 | | Roth | 12-18-2001 | |
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FOREIGN PATENT DOCUMENTS

| Examiner Initials | Cite No. | Foreign Patent Document | | | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document MM-DD-YYYY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T |
|----------------------|-------------|-------------------------|-------------|-------------------------|--|--|---|---|
| | | Office | Number | Kind Code (if known) | | | | |
| | 02 | WO | 2002/085923 | | The Scripps Research Institute | 10-31-2002 | | |
| | 03 | WO | 2002/086075 | | The Scripps Research Institute | 10-31-2002 | | |
| | 04 | WO | 2003/031464 | A2 | Neose Technologies, Inc. | 04-17-2003 | | |
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OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

| Examiner Initials | Cite No. | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T |
|----------------------|-------------|---|---|
| | 05 | Anderson et al., <i>Exploring the Limits of Codon and Anticodon Size</i> , <u>Chemistry and Biology</u> , Vol. 9, 237-244 (2002) | |
| | 06 | Arslan, T., et al., (1997) <i>Structurally Modified Firefly Luciferase. Effects of Amino Acid Substitution at Position 286</i> , <u>J. Am. Chem. Soc.</u> 119:10877 | |
| | 07 | Ayers, B., et al., (1999) <i>Introduction of Unnatural Amino Acids into Proteins Using Expressed Protein Ligation</i> , <u>Biopolymers</u> 51:343-354 | |
| | 08 | Begley, T. P., et al. (1997) <i>Cofactor Biosynthesis: A Mechanistic Perspective</i> , in <u>Top. Curr. Chem.</u> , eds. Leeper, F. J. & Vederas, J. C. (Springer-Verlag, New York), Vol. 195, pp. 93-142 | |

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|-----------------------|--|--------------------|--|
| Examiner Signature | | Date Considered | |
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| Substitute for form 1449A-B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i> | Complete if Known | |
| | Application Number | 10/686,944 |
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|----|---|--|
| 09 | Bertozzi, C. R., & L. L. Kiessling, (2001) <i>Chemical Glycobiology</i> , <u>Science</u> 291:2357 | |
| 10 | Brick, P., et al. (1989) <i>Structure of Tyrosyl-tRNA Synthetase Refined at 2-3 Å Resolution: Interaction of the Enzyme with the Tyrosyl Adenylate Intermediate</i> , <u>J. Mol. Biol.</u> 208:83-98 | |
| 11 | Cao, S., et al., (1995) <i>Stereoselective Phase Transfer Catalyzed Syntheses of Glycosyloxsuccinimides and their Transformation into Glycophobes</i> , <u>Tetrahedron</u> 51:6679-6686 | |
| 12 | Chin, J. W. et al., (2002) <i>Addition of p-Azido-L-phenylalanine to the Genetic Code of Escherichia coli</i> , <u>J. Am. Chem. Soc.</u> 124:9026 | |
| 13 | Chin, J. W. et al., (2002) <i>Addition of photocrosslinking amino acid to the genetic code of Escherichia coli</i> , <u>Proc. Natl. Acad. Sci. U S A</u> 99 | |
| 14 | Chin, J. W. et al, (2003) <i>An Expanded Eukaryotic Genetic Code</i> , <u>Science</u> , 301:964-967 | |
| 15 | Cornish, V. W., et al. (1996) <i>Site-Specific Protein Modification Using a Ketone Handle</i> , <u>J. Am. Chem. Soc.</u> 118: 8150-8151 | |
| 16 | Davis, B. G., (2002) <i>Synthesis of Glycoproteins</i> , <u>Chem. Rev.</u> 102:579 | |
| 17 | Davis, N. J. and, Flitsch, S. L. (1991) <i>A Novel Method for the Specific Glycosylation a Proteins</i> , <u>Tetrahedron Lett.</u> 32:6793-6796 | |
| 18 | Diaz, E., et al. (2001) <i>Biogradation of Aromatic Compounds by Escherichia coli</i> , <u>Microbiol. Mol. Biol. Rev.</u> 65: 523-569 | |
| 19 | Dougherty, (2000) <i>Unnatural Amino Acids as Probes of Protein Structure and Function</i> , <u>Current Opinion in Chemical Biology</u> , 4:645-652 | |
| 20 | Geoghegan, K. F. & Stroh, J. G. (1992) <i>Site-Directed Conjugation of Nonpeptide Groups to Peptides and Proteins via Periodate Oxidation of α2-Amino Alcohol. Application to Modification at N-Terminal Serine</i> , <u>Bioconjug. Chem.</u> 3:138-146 | |
| 21 | Hang, H. C., & Bertozzi, C. R. (2001) <i>Chemoselective Approaches to Glycoprotein Assembly</i> , <u>Acc. Chem. Res.</u> 34:727 | |
| 22 | Kitagawa, H., and Paulson, J. C. (1994) <i>Cloning of a Novel α2,3-Sialyltransferase That Sialylates Glycoprotein and Glycolipid Carbohydrate Groups</i> , <u>J. Biol. Chem.</u> 269:1394-1401 | |
| 23 | Lamarre-Vincent, N., & Hsieh-Wilson, L., (2003) <i>Dynamic Glycosylation of the Transcription Factor CREB: A Potential Role in Gene Regulation</i> , <u>J. Am. Chem. Soc.</u> 125:6612 | |
| 24 | Liu, D.R. & Schultz, P.G. (1999) <i>Progress toward the evolution of an organism with an expanded genetic code</i> . <u>PNAS, USA</u> 96, 4780-4785 | |
| 25 | Macmillan, D.; et al., (2002) <i>Solid-Phase Synthesis of Thioether-Linked Glycopeptide Mimics for Application to Glycoprotein Semisynthesis</i> , <u>Org Lett</u> 4:1467-1470 | |

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|--------------------|----|--|--|
| | 26 | Magliery, T.J. et al. (2001) <i>Expanding the Genetic Code: Selection of Efficient Suppressors of Four-base Codons and Identification of "Shifty" Four-base Codons with a Library Approach in Escherichia coli</i> , <u>J. Mol. Biol.</u> 307: 755-769 | |
| | 27 | Mahal, L. K., et al. (1997) <i>Engineering Chemical Reactivity on Cell Surfaces Through Oligosaccharide Biosynthesis</i> , <u>Science</u> 276: 1125-1128 | |
| | 28 | Muir, T. W., et al. (1998) <i>Expressed protein ligation: A general method for protein engineering</i> , <u>Proc. Natl. Acad. Sci. U S A</u> 95:6705-6710 | |
| | 29 | Okeley, N. M. & van der Donk, W. A. (2000) <i>Novel cofactors via post-translational modification of enzyme active sites</i> , <u>Chem. Biol.</u> 7:R159-R171 | |
| | 30 | Santoro, S. W., et al., (2002) <i>An efficient system for the evolution of aminoacyl-tRNA synthetase specificity</i> , <u>Nat. Biotechnol.</u> 20:1044 | |
| | 31 | Sears, P. & Wong, C. H. (2001) <i>Toward Automated Synthesis of Oligosaccharides and Glycoproteins</i> , <u>Science</u> 291:2344 | |
| | 32 | Shin, Y., et al., (1999) <i>Fmoc-Bases Synthesis of Peptide^α Thioesters: Application to the Total Chemical Synthesis of Glycoprotein by Native Chemical Ligation</i> , <u>J. Am. Chem. Soc.</u> 121:11684-11689 | |
| | 33 | Tolbert, T. J. and Wong, C.-H. (2000) <i>Intein-Mediated Synthesis of Proteins Containing Carbohydrates and Other Molecular Probes</i> , <u>J. Am. Chem. Soc.</u> 122:5421-5428 | |
| | 34 | Varki, A. (1993) <i>Biological roles of oligosaccharides: all of the theories are correct</i> , <u>Glycobiology</u> 3:97-130 | |
| | 35 | Wacker, M. et al., (2002) <i>N-Linked Glycosylation in Campylobacter jejuni and Its Functional Transfer in E. coli</i> , <u>Science</u> 298:1790 | |
| | 36 | Wang, L., et al. (2000) <i>A New Functional Suppressor tRNA/Aminoacyl-tRNA Synthetase Pair for the in Vivo Incorporation of Unnatural Amino Acids into Proteins</i> , <u>J. Am. Chem. Soc.</u> 122:5010-5011 | |
| | 37 | Wang, L. & Schultz, P. G. (2001) <i>A general approach for the generation of orthogonal tRNAs</i> , <u>Chem. Biol.</u> 8: 883-890 | |
| | 38 | Wang, L., et al. (2001) <i>Expanding the Genetic Code of Escherichia coli</i> , <u>Science</u> 292: 498-500 | |
| | 39 | Wang, L., et al. (2002) <i>Adding L-3-(2-Naphthyl)alanine to the Genetic Code of E. coli</i> , <u>J. Am. Chem. Soc.</u> 124(9):1836-1837 | |
| | 40 | Wang, L., et al., (2003) <i>Addition of the keto functional group to the genetic code of Escherichia coli</i> , <u>Proc. Natl. Acad. Sci. U.S.A.</u> 100(1):56-61 | |
| | 41 | Witte, K., et al., (1997) <i>Enzymatic Glycoprotein Synthesis: Preparation of Ribonuclease Glycoforms via Enzymatic Glycopeptide Condensation and Glycosylation</i> , <u>J. Am. Chem. Soc.</u> 119:2114-2118 | |
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|--|----|--|--|
| | 42 | Witte, K., et al., (1998) <i>Solution-and Solid-Phase Synthesis of N=Protected Glycopeptide Esters of the Benzyl Type as Substrates for Subtilisin-Catalyzed Glycopeptide Couplings</i> , <u>J. Am. Chem. Soc.</u> 120:1979-1989 | |
| | 43 | Wells, L. et al., (2001) <i>Glycosylation of Nucleocytoplasmic Proteins: Signal Transduction and O-GlcNAc</i> , <u>Science</u> 291:2376 | |
| | 44 | Zhang, Z., et al. (2002) <i>The Selective Incorporation of Alkenes into Proteins in Escherichia coli</i> , <u>Angew. Chem. Int. Ed. Engl.</u> 41(15):2840-2842 | |
| | 45 | Zhang, Z. et al., (2003) <i>A New Strategy for the Site-Specific Modification of Proteins in Vivo</i> , <u>Biochemistry</u> , 42:6735-6746. | |

| | | | |
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